

AMENDMENTS TO THE CLAIMS

Please amend the claims as indicated below. The language being added is underlined (“ ”) and the language being deleted contains either a strikethrough (“”) or is enclosed by double brackets (“[[]]”).

LISTING OF CLAIMS

1. (Currently Amended) A method for implementing smart Digital Subscriber Line (DSL) for Long reach Digital Subscriber Line (LDSL) systems, the method comprising:

defining a candidate system to be implemented by an LDSL system, wherein
defining a candidate system comprises defining a number of power spectral density
(PSD) masks;

optimizing criteria associated with the candidate system to create an optimized
candidate system; and

selecting ~~[[a]]~~ the optimized candidate system to implement in an LDSL system.

2. (Original) The method of claim 1 wherein defining a candidate system further comprises: determining features of upstream transmission.

3. (Currently Amended) The method of claim 2 wherein determining features of upstream transmission further comprises: determining one or more of: cut-off frequencies, side lobe shapes, overlap, partial overlap or Frequency Division Duplexing (FDD) characteristics.

4. (Original) The method of claim 1 wherein defining a candidate system further comprises: determining features of downstream transmission.

5. (Original) The method of claim 4 wherein determining features of downstream transmission further comprises: determining one or more of: cut-off frequencies, side lobe shapes, overlap, partial overlap or FDD characteristics.

6. (Original) The method of claim 1 wherein optimizing criteria associated with the candidate system further comprises: optimizing criteria associated with the candidate system to fulfill upstream and downstream performance targets.

7. (Original) The method of claim 1 wherein selecting a candidate system to implement in an LDSL system further comprises: selecting a spectral mask for use with upstream or downstream transmission.

8. (Original) The method of claim 1 wherein selecting a candidate system to implement in an LDSL system further comprises: selecting a candidate system during modem handshake procedures.

9. (Canceled).

10. (Currently Amended) The method of claim [[9]] 1 wherein one of the number of masks is defined by the following relations, wherein f is a frequency band in kHz and D is the value of the mask in dBm/Hz:

for $0 < f \leq 4$, then $D = -97.5$, with max power in the in 0-4 kHz band of +15 dBm;
for $4 < f \leq 5$, then $D = -92.5 + 18.64 \log_2(f/4)$;
for $5 < f \leq 5.25$, then $D = -86.5$; for $5.25 < f \leq 16$, then $D = -86.5 + 15.25 \log_2(f/5.25)$;
for $16 < f \leq 32$, then $D = -62 + 25.5 \log_2(f/16)$;
for $32 < f \leq 138$, then $D = -36.5$; for $138 < f \leq 323.4375$, then $D = -31.8$;
for $323.4375 < f \leq 517.5$, then $D = -31.8 - 0.0371 \times (f - 323.4375)$;
for $258.75 < f \leq 1800$, then $D = \max(-39 - 23.27 \times \log_2(f/517.5), -65)$;
for $1800 < f \leq 2290$, then $D = -65 - 72 \times \log_2(f/1800)$;
for $2290 < f \leq 3093$, then $D = -90$;
for $3093 < f \leq 4545$, then $D = -90$ peak, with max power in the $[f, f+1 \text{ MHz}]$ window of $(-36.5 - 36 \times \log_2(f/1104) + 60)$ dBm; and
for $4545 < f \leq 11\ 040$, then $D = -90$ peak, with max power in the $[f, f+1 \text{ MHz}]$ window of -50 dBm.

11. (Currently Amended) The method of claim [[9]] 1 wherein one of the number of masks is defined by the following relations, wherein f is a frequency band in kHz and M is the value of the mask in dBm/Hz:

for $0 < f < 4$, then $M = -97.5$; for $4 < f < 80$, then $M = -92.5 + 4.63 \log_2(f/4)$;
for $80 < f < 138$, then $M = -72.5 + 36 \log_2(f/80)$; for $138 < f < 1104$, then $M = -37.9$;

for $1104 < f < 1622$, then $M = -37.9 - 15.5 \log_2(f/1104)$; for $1622 < f < 3750$, then $M = -46.5 - 2.9 \log_2(f/1622)$;

for $f = 3750$, then $M = -76.5$; for $f = 3925$, then $M = -101.5$; and for $f > 3925$, then $M = -101.5$.

12. (Currently Amended) The method of claim [[9]] 1 wherein one of the number of masks is defined by the following relations, wherein f is a frequency band in kHz and D is the value of the mask in dBm/Hz:

for $0 < f < 4$, then $D = -97.5$; for $4 < f < 25.875$, then $D = -92.5 + 21 \log_2(f/4)$;

for $25.875 < f < 1104$, then $D = -38.3$;

for $1104 < f < 1622$, then $D = -38.3 - 14.75 \log_2(f/1104)$;

for $1622 < f < 3750$; then $D = -46.5 - 2.9 \log_2(f/1622)$;

for $f = 3750$, then $D = -76.5$; and for $f > 3925$, then $D = -101.5$.

13. (Currently Amended) The method of claim [[9]] 1 wherein one of the number of masks is defined by the following relations, wherein f is a frequency band in kHz and U is the value of the mask in dBm/Hz:

for $0 < f < 4$, then $U = -97.5$;

for $4 < f < 25.875$, then $U = -92.5 + 21.5 \log_2(f/4)$;

for $25.875 < f < 138$, then $U = -34.5$;

for $138 < f < 276$, then $U = -34.5 - 26 \log_2(f/138)$;

for $276 < f < f_{\text{int}}$, then $U = -60.5 - 95 \log_2(f/276)$; and

for $f_{\text{int}} < f < 686$, then $U = 10 \log_{10}(0.05683 * f^{(1.5)})$.

14. (Currently Amended) The method of claim [[9]] 1 wherein one of the number of masks is defined by the following relations, wherein f is a frequency band in kHz and M is the value of the mask in dBm/Hz:

for $0 < f < 4$, then $M = -97.5$;

for $4 < f < 80$, then $M = -92.5 + 4.63 \log_2(f/4)$;

for $80 < f < 138$, then $M = -72.5 + 36 \log_2(f/80)$;

for $138 < f < 1104$, then $M = -37.9$;

for $1104 < f < 1622$, then $M = -37.9 - 15.5 \log_2(f/1104)$;

for $1622 < f < 3750$, then $M = -46.5 - 2.9 \log_2(f/1622)$;

for $f = 3750$, then $M = -76.5$;

for $f = 3925$, then $M = -101.5$; and

for $f > 3925$, then $M = -101.5$.

15. (Currently Amended) The method of claim [[9]] 1 wherein one of the number of masks is defined by the following relations, wherein f is a frequency band in kHz and U is the value of the mask in dBm/Hz:

for $0 < f < 4$, then $U = -97.5$;

for $4 < f < 25.875$, then $U = -92.5 + 21.5 \log_2(f/4)$;

for $25.875 < f < 138$, then $U = -34.5$;

for $138 < f < 276$, then $U = -34.5 - 26 \log_2(f/138)$;

for $276 < f < f_{\text{int}}$, then $U = -60.5 - 95 \log_2(f/276)$;

for $f_{\text{int}} < f < 686$, then $U = 10 \log_{10}(0.05683 \cdot f^{1.5})$; and

for $f > 686$, then $U = -100$.

16. (Currently Amended) The method of claim [[9]] 1 wherein one of the number of masks is defined by the following relations, wherein f is a frequency band in kHz and D is the value of the mask in dBm/Hz:

for $0 < f < 4$, then $D = -97.5$;

for $4 < f < 25.875$, then $D = -92.5 + 21 \log_2(f/4)$;

for $25.875 < f < 1104$, then $D = -38.3$;

for $1104 < f < 1622$, then $D = -38.3 - 14.75 \log_2(f/1104)$;

for $1622 < f < 3750$, then $D = -46.5 - 2.9 \log_2(f/1622)$;

for $f = 3750$, then $D = -76.5$; and

for $f > 3925$, then $D = -101.5$.